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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,694	06/26/2001	Hiroyuki Sugimura	1508.65651	1760

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EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/891,694

Applicant(s)

SUGIMURA ET AL.

Examiner

HOAN C. NGUYEN

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation "the external force is generated by static electricity of the substrate obtained by charging the substrate" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The following limitations in claim 4 are not enable "the external force is generated by static electricity of the substrate obtained by charging the substrate":

- Substrate conventionally made of insulating material is not able to charge and generate static electricity. Only the ferroelectric material with aligning dipoles is possible to generate electrostatic field. A glass or plastic substrate cannot be charged.
- Neutral (uncharged) liquid crystal molecule is not able to affected by electrostatic force. Besides, the liquid crystal material may align dipoles to generate electrostatic field, which does not describe in the invention of how to generate dipole alignment in liquid crystal molecules while injecting on the substrate, so that electrostatics of these dipoles can attract or repel with the external electrostatic charge on substrate. Besides, liquid crystal material cannot be charged while injecting or filling into liquid crystal cell.
- However, electrostatic charges on substrate can be great enough to damage or cause the malfunction of electronic parts such as TFT or alignment layer. Besides, the ESD (electrostatic discharge) protection is necessary before finishing the whole TFT and LCD fabrication processes.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

. A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Koji et al. (JP6051256) in applicant's IDS.

Koji et al. teach (Fig 1-5) a liquid crystal display device manufacturing system comprising:

- a loading table 301 on which a substrate 1 is loaded;
- a syringe arranged over the loading table and filled with a liquid crystal;
- a piston inserted movably in the syringe;
- a liquid crystal supply needle 2 fitted to a lower portion of the syringe for dropping the liquid crystal;
- a liquid crystal 2 constant amount supplying means for supplying the liquid crystal into the syringe by a defined amount.

wherein the liquid crystal constant amount supplying means consists of a plunger type syringe (claim 13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaki et al. (US6322735B1).

Yamaki et al. teach (Fig. 11) a method for molding thermoplastic resin comprising the steps of:

- dropping a thermoplastic resin to the first surface of the first substrate from a thermoplastic resin supply needle 3 provided to a syringe in which the thermoplastic resin is filled; and
- dropping down the thermoplastic resin, that is adhered to a surface of the thermoplastic resin supply needle, onto the first substrate by an external force in a middle of dropping of the liquid crystal or after the liquid crystal is dropped.
- supplying the thermoplastic resin into the syringe by the defined amount.

wherein

- the external force is generated by blowing a gas 7 against the thermoplastic resin supply needle.
- a method of blowing the gas against the liquid crystal supply needle is a method of blowing the gas against the thermoplastic resin supply needle from an air supply needles that are arranged around the thermoplastic resin supply needle.
- the thermoplastic resin in the syringe is pushed out into the thermoplastic resin supply needle by a plunger that is pushed mechanically, or is pushed out into the thermoplastic resin supply needle by an air pressure.

However, Yamaki et al. fail to disclose a method for filling liquid crystal for forming the liquid crystal layer. Yamaki et al. invent a method for filling the

thermoplastic resin layer to make liquid crystal display parts such as light guiding plates and diffuser panels.

Since the **thermoplastic resin and liquid crystal are both polymer solutions**, therefore, the method of forming thermoplastic resin layer can be used to form the liquid crystal layer for improving flowability and as a result, a high transferability of liquid crystal (or thermoplastic resin) can be attained.

It is conventional art that liquid crystal display device manufacturing method comprise a step of forming a sealing member along a periphery of a display area on a first surface of a first substrate for preventing liquid crystal material contacting with the outside environment.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a molding thermoplastic resin method as Yamaki et al. disclosed with a filling liquid crystal method for improving flowability and as a result, a high transferability of liquid crystal (or thermoplastic resin) can be attained.

2. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koji et al. (JP6051256) in applicant's IDS in view of Yamaki et al. (US6322735B1).

Koji et al. teach (Fig 1-5) a liquid crystal display device manufacturing system comprising:

- a loading table on which a substrate is loaded; a syringe arranged over the loading table and filled with a liquid crystal;

- a liquid crystal supply needle fitted to a lower portion of the syringe, for dropping the liquid crystal;

wherein

- the air supplying means having air supply needles each has a blowing port directed to the liquid crystal supply needle, and at least two air supply needles are provided (claim 9).
- the syringe has a structure that drops the liquid crystal from the liquid crystal supply needle by a mechanical pressure (claim 10).
- the syringe and the loading table are arranged relatively movably (claim 11).

However, Koji et al. fail to disclose an air supplying means arranged around the liquid crystal supply needle, for blowing a gas against the liquid crystal supply needle.

Yamaki et al. teach the method of forming thermoplastic resin layer with an air supplying means arranged around the thermoplastic resin supply needle, for blowing a gas against the thermoplastic resin supply needle. Since the **thermoplastic resin and liquid crystal are both polymer solutions**, therefore, the method of forming thermoplastic resin layer can be used to form the liquid crystal layer for improving flowability and as a result, a high transferability of liquid crystal (or thermoplastic resin) can be attained.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device

manufacturing system as Koji et al. disclosed and a molding thermoplastic resin method as Yamaki et al. disclosed with a filling liquid crystal method for improving flowability and as a result, a high transferability of liquid crystal (or thermoplastic resin) can be attained.

3. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koji et al. (JP6051256) in applicant's IDS as applied to claim 11 in view of Shimano (US5277333A).

Shimano teaches a liquid crystal display device manufacturing system wherein the piston is pushed by air pressure for accurately discharging the predetermined amount of liquid crystal and preventing dripping of liquid crystal from the syringe.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device manufacturing system as Koji et al. disclosed with the piston pushed by air pressure for accurately discharging the predetermined amount of liquid crystal and preventing dripping of liquid crystal from the syringe.

Allowable Subject Matter

Claim 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Please see the 112 rejection above.

As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Abe (US5406989A) discloses a method and dispenser for filling liquid crystal into LCD cell.

Maruyama et al. (US20030012667A1) disclose a method of discharging a fluid, includes feeding a fluid into a gap defined between two surfaces in a closed space, and relatively oscillating the two surfaces to apply relative oscillation with high frequency to the gap so as to occur a squeeze pressure to the gap, and thus intermittently discharging the fed fluid through a discharge port provided in either one of the two surfaces by using the squeeze pressure.

Koji (JP405158007A) discloses the liquid crystal injection device is equipped with a base 3 which supports a liquid crystal injection object 2 in a vacuum chamber 1 and a liquid crystal injection cylinder 5 which has its tip injection needle part 6 opposite the liquid crystal injection object 2 placed on the base 3 and is so provided as to inject the liquid crystal 4 through the injection needle part 6; and a fine feeding mechanism 8 is coupled with the piston 7 of the liquid crystal injection cylinder 5.

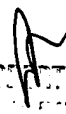
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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April 10, 2003


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